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RECORD OF ORAL HEARING

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS

AND INTERFERENCES

Ex parte WILFRIED HEIDE, STEFAN WICKEL,
THOMAS DANIEL,
JOACHIM NILGES,
and JURGEN HOFMANN

Appeal 2008-1435
Application 10/765,152
Technology Center 1700

Oral Hearing Held: April 17, 2008

Before EDWARD C. KIMLIN, BRADLEY R. GARRIS, and
KAREN M. HASTINGS, Administrative Patent Judges

ON BEHALF OF THE APPELLANTS:

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The above-entitled matter came on for hearing on Thursday, April 17, 2008, commencing at 10:08 a.m., at the U.S. Patent and Trademark Office, 600 Dulany Street, Alexandria, Virginia, before Dawn A. Brown, Notary Registration No. 7066896, Notary Public.

THE CLERK: Calendar Number 46, Mr. Koschmieder.

JUDGE KIMLIN: Good morning.

DR. KOSCHMIEDER: Good morning. Should I spell my name for the record?

JUDGE KIMLIN: Sure. Go right ahead.

DR. KOSCHMIEDER: Koschmieder, K-O-S-C-H-M-I-E-D-E-R.

JUDGE KIMLIN: That is what we have.

DR. KOSCHMIEDER: Great.

JUDGE KIMLIN: Now we know how to pronounce it. Where are you from? Across the street.

DR. KOSCHMIEDER: Across the street.

JUDGE KIMLIN: Welcome. Hope you had a safe trip.

DR. KOSCHMIEDER: It was uneventful.

Shall I begin?

JUDGE KIMLIN: Sure.

DR. KOSCHMIEDER: A few things I'd like to point out between the claimed invention and the method that is disclosed in the Tsubakimoto prior art, and that is U.S. Patent 4625001. And for the record, Tsubakimoto is spelled T-S-U-B-A-K-I-M-O-T-O.

In Tsubakimoto, they're describing a number of machines that can be used to carry out polymerizations and then isolate a finely ground material obtained from the polymerizations.

And you can see that in the figures essentially what Tsubakimoto was disclosing is a reaction vessel that has a stirring mechanism and then some what I'll call downstream mechanism for further isolating material.

The point I'm going to get to is in Tsubakimoto the polymerization of the monomer materials can be loaded in the reaction vessel, stirred for a period of time to obtain polymerization, and subsequently, the polymerized material is withdrawn or removed from that reaction vessel.

In the presently claimed invention, we have a continuous method in which there is a continuous addition of the monomer mixture into this mixing meter which has these combination of stirring elements and transporting elements. So you can imagine the difference there.

In the claimed invention, we have continuous input, continuous output of material happening very quickly where there is not any necessary preliminary polymerization vessel. So Tsubakimoto is different in that in principal there is a pre-polymerization step taking place in that vessel and subsequently the material is isolated.

That is how I would initially on a broad scale distinguish the claimed invention from what is disclosed in the Tsubakimoto.

JUDGE HASTINGS: Isn't it true once the reaction gets underway that the solution is fed continuously to the kneader and it is

continuously fed into and continuously let out of the apparatus of the reference?

DR. KOSCHMIEDER: I don't believe so, no. They use the word "continuous." It is defined as including the -- well, actually, it is defined as keeping a constant level in that -- in the apparatus -- the prior art apparatus.

So keeping a constant level doesn't mean you're continuously feeding materials in. You could feed in a batch, so to speak, allow it to stir and then replenish it. I wouldn't characterize that as a continuous feeding of materials in the prior art apparatus.

JUDGE HASTINGS: Well, column 13 of the reference does characterize it as the solution is fed continuously to the kneader and continuously in that form discharged at column 13, lines 26 through 31.

DR. KOSCHMIEDER: Let me find the definition of -- so I'm looking at column 6, beginning at line 25. The word "continuous" is defined. The term "continuous" as used herein is not required to be interpreted as constant, the exact sense of the word that may be interpreted as portraying, the discharge of the produced polymer in a pulsating manner or in an intermittent manner.

So while they may use that word "continuous" in column 13, it is not necessarily indicative of continuous feeding of the product.

And I think especially with respect --

JUDGE GARRIS: What is your point here? I'm not sure I'm following. You say that this reference doesn't necessarily require "continuous" to mean the same thing as you. It could mean other things. Is that your point?

DR. KOSCHMIEDER: Well, my point is that in Tsubakimoto, they're describing an apparatus wherein constant addition of monomer material is not a requirement. In fact, in Tsubakimoto --

JUDGE GARRIS: The issue is not if it is required; the issue is if it is disclosed.

DR. KOSCHMIEDER: Perhaps it is suggested in Tsubakimoto, but is there a continuous monomer mixture disclosed such as required in the invention of the present claim. I say no, it is not.

And that is particularly relevant to distinguish the distinction that I'm making between Tsubakimoto and the claimed invention is especially relevant with respect to claims 30 to 32, the dependent claims that are pending.

In our dependent claims, 30 through 32, we are limiting the amount -- the residence time of the monomer mixture and the kneading device. As I mentioned before, in the claimed invention where we have a continuous kneading of the monomer mixture into the mixing meter and then subsequently conveying downstream, that is a very short residence time.

In Tsubakimoto, with this what I'll call pre-polymerization step, you're not going to have that short residence time. I think my comments in that regard are especially relevant to the dependent claims.

JUDGE GARRIS: I think you just conceded this reference at least would have suggested the continuous feeding as you interpret in your claim.

And if you're performing that kind of continuous operation in the reference, you're using the same materials that the reference uses, then

why would the residence time not have been the consequence -- the obvious consequence of using those same materials in a continuous fashion?

DR. KOSCHMIEDER: The apparatus of Tsubakimoto is one in which the first -- let me use the word stage -- that is not a word that is in Tsubakimoto. I'm going to call it the first stage.

You have a mixing stage, wherein first in Tsubakimoto the monomer mixture is added to a vessel which has stirring elements. So first in Tsubakimoto you have the monomer mixture to the vessel in which the monomer mixture is stirred by these elements.

In contrast, the claimed invention you continuously add to a mixing kneader that has elements having transporting and kneading elements.

JUDGE GARRIS: The examiner disagrees with your construction of the reference disclosure, does he not? He is applying this reference as a 102.

DR. KOSCHMIEDER: I believe that is incorrect. I think it is incorrect for a number of reasons if we look at our independent claim.

JUDGE GARRIS: Before we go there, if, in fact, the examiner were to be considered correct that kneading and transporting elements are indeed present in the reference as required by your claim, then I want to get back to the original question I raised with respect to these dependent claims.

The residence time, then, had been the obvious consequence of using the same apparatus with the same protocol, the same procedures, that led to the same residence time.

DR. KOSCHMIEDER: I would say no because the apparatus -- even as you look at the apparatus in the figures of Tsubakimoto, you see

there is a first large -- I use the word "stage" again -- it is a vessel in which the polymerization was initiated and that is also reflected in the examples of Tsubakimoto.

So even if the examiner is correct, with respect to dependent claims 30 through 32, it is not necessarily a consequence or obvious that you can obtain short residence time using the apparatus of Tsubakimoto.

JUDGE GARRIS: One of the figures of Tsubakimoto we should be looking at here -- didn't the examiner refer us to figures 4 and 5?

DR. KOSCHMIEDER: That is correct.

JUDGE HASTINGS: And isn't that a single mixer kneader with a discharge screw? I don't see any -- I don't know what you're referring to.

DR. KOSCHMIEDER: Well, if you'll see the dots there. Let's look at figure number 5 and figure number 5 has -- let's call it a level -- and that level is identified by reference number 33 and those dots.

That dot is what I guess you could refer to it as a ballast of the polymerization or the monomer mixture. That is what I mean by the vessel, and that is the large volume there identified by reference number 33.

So necessarily, as you add material there, there is going to be a ballast or a delay which would be lengthened as that material is mixed with the mixing elements identified as reference 26 in figure 5.

JUDGE HASTINGS: As the reference teaches, as you continuously add, you also continuously extract through the screws 29 and 30 at the bottom.

DR. KOSCHMIEDER: Perhaps you continuously add and continuously extract, but not instantaneously.

JUDGE HASTINGS: Okay.

DR. KOSCHMIEDER: And if you look at the examples of Tsubakimoto, they do have some times provided. For example, I'm looking in -- at column 9, line 16. Polymerization began to proceed 15 minutes after the addition of the polymerization initiated. So there you have 15 minutes before the product is even formed much less removed from the prior art apparatus.

Did that answer your question?

JUDGE GARRIS: Did you want to, maybe, have us focus -- why don't you point out to the aspects of your independent claim to distinguish further the reference the examiner has applied?

DR. KOSCHMIEDER: We can begin with the -- this is going to be line -- six from the bottom of independent claim 10 where it recites a mixing kneader having two axially parallel rotating shafts having a plurality of kneading and transporting elements conveying the monomer mixture from upstream to downstream.

If we look at Tsubakimoto, first, as I mentioned already, he is describing reference number 26 as mixing elements and not as transporting elements.

I believe the examiner's position is that it would naturally -- you would naturally have conveyance of material when you mixed it. Perhaps you will have mixing, but that is not necessarily conveyance of material. Nothing has been conveyed when you mix something.

I think the examiner has taken the position that if you have a closed vessel and you move some material from one end to the other end you have conveyed it. And I would disagree with that. You haven't

conveyed anything; you just mixed it. I think that conveyance step requirement of our claim is different.

Now, with respect to the requirement that we have two axially parallel rotating screws, the examiner has pointed alternately to element 26 in figure 5 or reference numbers 29 and 30. 29 and 30 probably come closest to what is claimed in the present application, but there is no indication in Tsubakimoto that those screws are, in fact, parallel.

JUDGE HASTINGS: How can you say that - just looking at figure 5 - 29 and 30 are not parallel?

DR. KOSCHMIEDER: Well, if that is a side-on view, reference number 30 could well be canted at an angle. It could even be -- 90 degrees would be an exaggeration, but that does not necessarily tell me that is a parallel orientation.

JUDGE HASTINGS: Well, I guess I would look at figure 4 which shows 29 in a parallel orientation with 26 and figure 5, both 29 and 30, are disclosed in the same manner.

I don't know how you view 30 as being anything but parallel to 29 or 26.

DR. KOSCHMIEDER: Because if 30 is being used to convey material, I don't see why there would be any requirement that it would necessarily be transported in a parallel fashion linearly in the same axis as 29. There is no description.

I think you're making that observation based solely upon figure 5 and maybe that is one conclusion you can come to. Tsubakimoto does not give us guidance with respect to whether or not those are parallel.

Regardless of that fact, I think there is another important issue, and that is the kneading and transporting elements. If we look at reference number 26, Tsubakimoto describes those only as mixing elements and not transporting elements.

So to make a long story short, I think it is those features of our claim 10 that distinguish from the apparatus of Tsubakimoto in that Tsubakimoto does not necessarily require that reference number 29 and 30 are actually parallel and further doesn't require that the reference number 26 must have mixing and kneading elements -- pardon me -- transporting elements.

JUDGE HASTINGS: Two questions. The curve on the elements on shaft 26 shown in figure 5 and figure 4, how could that not cause some transportation? The examiner's position is there is at least some transporting and conveying going on by these mixer elements.

DR. KOSCHMIEDER: Simply because of its function, and you can imagine a large mixing bowl having anything in it. When you mix the materials in that mixing bowl, are they being transported or conveyed? No. I think they're staying in the mixing bowl. And my point is reference number 26 is not functioning in any manner to remove materials from that vessel.

JUDGE HASTINGS: In a mixing bowl, you have no outlet if you just have a big mixing bowl. Here, you have an outlet and you have a disclosure of continuous in feeding and out feeding.

But to move on, claim 26 which depends from claim 10, what is the difference between your claim 10, the shaft having a plurality of

kneading and transporting elements, and claim 26 which says the shaft having a combination of kneading and transporting elements.

The examiner's position is that shaft 29, as you've admitted here, can function to do the transporting and have the transporting elements on it and the shaft 26 has the kneading elements on it, so that combination does satisfy at least two shafts having a plurality of kneading and transporting elements.

And likewise, potentially with claim 26. But what is the difference between "a plurality" and "a combination".

DR. KOSCHMIEDER: In claim 26, as I read claim 26, each parallel rotating shaft has to have both kneading and transporting elements, whereas in claim 10, you could interpret that in a broader fashion.

JUDGE HASTINGS: So only one shaft could have kneading elements and the other shaft could have transporting elements?

DR. KOSCHMIEDER: Correct.

JUDGE GARRIS: Why doesn't that construction of claim 10 actually read on figure 5 of our reference in which you've characterized shaft 26 as having kneading or mixing elements and shaft 29 as having transporting elements?

DR. KOSCHMIEDER: Did I characterize 26 as having kneading elements or did I characterize 26 as having mixing elements? I would characterize reference number 26 in figure 5 as having mixing elements. If I earlier said kneading elements, that is not correct.

JUDGE GARRIS: What is the difference?

DR. KOSCHMIEDER: A kneader -- well, you can imagine kneading is like kneading dough. And a mixer could, for example, carry out mixing without the kneading.

JUDGE GARRIS: Let's not get too cute here. You're claiming here a mixing kneader and it has these two shafts and has a plurality of kneading and transporting elements.

I'm not seeing the difference between a mixing kneader that has kneading elements and a mixing kneader that has mixing elements. It seems to me kneading is a form of mixing and mixing preforms a kneading function. I'm just not seeing whatever distinction you're trying to draw here.

DR. KOSCHMIEDER: The distinction I'm trying to draw I think may be more applicable to dependent claims 30 through 32 where there is a requirement for residence time.

I think -- if you think of -- if you look at claims 30 through 32 where there is a residence time requirement and if you consider Tsubakimoto with respect to the -- as I mentioned before, the stage or the ballast nature of the reaction vessel that has to occur, I think that is where the distinction comes forward in its clearest manner, at least with respect to claims 30 through 32.

One can argue whether or not kneading is mixing and transporting is conveying, etc., but like I just said, I think the distinction really comes forward in claims 30 through 32.

JUDGE HASTINGS: Let's move to, then, column 9 of the reference and the argument that you made in your brief that at a minimum, the time disclosed here was 50 minutes you said.

And in the brief on column 9 you said that first it discloses that polymerization begins to proceed 15 minutes after the addition of the polymerization initiator, and then you added that 15 minutes to a statement just a couple of lines later on that says the inner temperature of the reaction system reached 80 degrees within 35 minutes of that same addition, as I read the reference, of the polymerization initiator.

Wouldn't it be more accurate to say that at worst this is saying 35 minutes? It is not saying 50 minutes, because both of these conditions that they're talking about in column 9, both occur after the addition of the polymerization initiator. They don't occur subsequent to each other, that is, they do not occur sequentially.

DR. KOSCHMIEDER: Pardon me one second. Let me just read through the disclosure.

JUDGE HASTINGS: Then we're potentially looking at 35 minutes versus claim 30 is 30 minutes.

DR. KOSCHMIEDER: You have a point as a matter of fact, and I'm sorry it is just not fresh enough in my mind to give you a clear answer. I see the point you're making.

When I wrote the brief, my interpretation was different and I added the 15 to 35, and I'm just not -- there was a reason for that, which doesn't come to mind now.

But just as I was flipping through this at the very last sentence, that is line 34 and 35 of column 9, it says the resultant homogeneous mixture was fed into the kneader over a period of 24 hours. Even that is indicating to me that somehow this was polymerized for 24 hours.

JUDGE HASTINGS: No. I don't know how we would do the calculations here, but as you said, there is a tank of solution, which is continuously fed into this kneader and continuously discharged.

And I guess it would depend on how large that initial charge was -- how long it would be in the kneader over that period of 24 hours. Neither the examiner or you have made an analysis on that basis.

DR. KOSCHMIEDER: Now, with respect to some of our other dependent claims, we have some dependent claims where we cite specific types of elements on our screws. For example, our dependent claims 27 through 29, each recite particular types of elements on the parallel rotating shafts. Those particular elements are not disclosed in Tsubakimoto.

So for example, if we look at claim 29, the axially parallel rotating shafts are equipped with L-shaped or U-shaped attachments. And although Tsubakimoto in figure 2 and 3 has some elements depicted diagrammatically, there is no indication those are L-shaped or U-shaped.

JUDGE HASTINGS: How about -- the examiner also referred to figure 6A through D, which are alternative embodiments of possible stirring blades for the mixer. Wouldn't one looking at 6A, conclude that seems to be generally L-shaped just by looking at it?

DR. KOSCHMIEDER: I would say no. And the reason I say no is from my past experience working with extruders and with equipment for extruding plastics. An L-shaped material or the U-shaped would refer to a -- in the case of an L-shaped device, the axis of the shaft passes through the long portion of the L.

And here the axis in figure 6A -- now, remember, this is not something that is disclosed either in our specification or in Tsubakimoto. This is from my own experience.

In figure 6A, the axis of the shaft is not coincident with the backbone of the L. And for a U-shaped material, it would be -- the axis would pass through the U's, the vertical portion of the U's.

JUDGE HASTINGS: Going back to the language of claim 29, it merely says there is at least one of an L-shaped or U-shaped attachment on the shaft. As I'm sure you recognize, the claim doesn't specify that the shaft formed the backbone of the L.

DR. KOSCHMIEDER: There was one additional dependent claim that I wanted to discuss, and that is a dependent claim which required that no heat is removed from the -- that is dependent claim 24. No heat is removed by a cooling of the reactor walls.

The examiner has taken the position that because Tsubakimoto discloses an embodiment wherein the heat is at least partially removed from using a water jacket that Tsubakimoto discloses or suggests subject matter from claim 24, and I would disagree with that. I think that partial removal of heat in no way suggests or discloses no removal of heat from the reactor wall.

JUDGE HASTINGS: Well, it says no heat is removed via cooling of the reactor walls. What the examiner is pointing to is that the cooling jacket 27 is optional. It is disclosed in the reference as being an optional cooling jacket.

So therefore, the reference also discloses -- you don't need a cooling jacket since it is optional. And if you don't have a cooling jacket,

the examiner's position is that you would then satisfy claim 24 because no heat would be removed via cooling of the reactor walls because there would no longer be the optional jacket 27 there.

DR. KOSCHMIEDER: I'm reading at column 4 beginning at line 38, for the purpose of keeping the aqueous monomer solution or partially removing the heat of polymerization reaction during polymerization, it is desirable to provide the polymerization vessel with a jacket.

So I'm not sure -- I don't understand why --

JUDGE HASTINGS: Column 5, line 36 on, says optionally, the vessel was provided near the bottom portion thereof with a jacket filled with a heat transfer medium. So he was relying on that line and saying since it is optional to provide it with a jacket, it is optional not to have a jacket.

DR. KOSCHMIEDER: And my point would be that there are ways to remove heat from the reaction wall other than having a cooling jacket on there. A fan could be present, for example, and naturally heat would be radiated through the wall.

So I'm not sure how the examiner from those two disclosure comes to the conclusion that there is an embodiment disclosed in Tsubakimoto where no heat is removed by a cooling of the reactor walls.

JUDGE KIMLIN: I guess, possibly, in the same way that yours doesn't have a cooling jacket, it would still be some transmission of heat through the wall.

DR. KOSCHMIEDER: Or alternatively, in an earlier part of the -- in the polymerization, any exothermic -- the exothermic nature of the polymerization could result in evaporation of water and thereby you could

have cooling. You wouldn't actually need radiative cooling through the reactor wall, but instead by evaporation of water or a side product formed during the polymerization.

JUDGE KIMLIN: Any further questions? I think we're beyond our time limit.

DR. KOSCHMIEDER: Thank you very much.

Whereupon, the proceedings at 10:40 a.m. were concluded.